SEQUENCE LISTING

(1) GENERAL INFORMATION:

    (i) APPLICANT: GUERIN-MARCHAND, Claudine
              DRUILHE, Pierre

    (ii) TITLE OF INVENTION: PEPTIDE SEQUENCES SPECIFIC FOR THE
        HEPATIC STAGES OF P. FALCIPARUM BEARING EPITOPES CAPABLE
        OF STIMULATING THE T LYMPHOCYTES

    (iii) NUMBER OF SEQUENCES: 46

    (iv) CORRESPONDENCE ADDRESS:
        (A) ADDRESSEE: Burns, Doane, Swecker & Mathis
        (B) STREET: P.O. Box 1404
        (C) CITY: Alexandria
        (D) STATE: Virginia
        (E) COUNTRY: United States
        (F) ZIP: 22313-1404

    (v) COMPUTER READABLE FORM:
        (A) MEDIUM TYPE: Floppy disk
        (B) COMPUTER: IBM PC compatible
        (C) OPERATING SYSTEM: PC-DOS/MS-DOS
        (D) SOFTWARE: PatentIn Release #1.0, Version #1.30

    (vi) CURRENT APPLICATION DATA:
        (A) APPLICATION NUMBER: US 08/098,327
        (B) FILING DATE: 24-NOV-1993
        (C) CLASSIFICATION:

    (vii) PRIOR APPLICATION DATA:
        (A) APPLICATION NUMBER: FR 91 01286
        (B) FILING DATE: 05-FEB-1991

    (viii) ATTORNEY/AGENT INFORMATION:
        (A) NAME: McGowan, Malcolm K.
        (B) REGISTRATION NUMBER: 39,300
        (C) REFERENCE/DOCKET NUMBER: 010830-045

    (ix) TELECOMMUNICATION INFORMATION:
        (A) TELEPHONE: (703) 836-6620
        (B) TELEFAX: (703) 836-2021

(2) INFORMATION FOR SEQ ID NO:1:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

(ix) FEATURE:
    (A) NAME/KEY: Peptide
    (B) LOCATION: 8
    (D) OTHER INFORMATION: /note= "Amino Acid 8 wherein Xaa is
        Glu or Gly."

(x) PUBLICATION INFORMATION:
    (H) DOCUMENT NUMBER: WO 92/13884
    (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

Leu Ala Lys Glu Lys Leu Gln Xaa Gln Gln Ser Asp Leu Glu Gln Glu
1   5   10   15

Arg

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 17 amino acids
    (B) TYPE: amino acid
    (C) STRANDEDNESS: single
    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
    (A) NAME/KEY: Peptide
    (B) LOCATION: 1
    (D) OTHER INFORMATION: /note= "Amino Acid 1 wherein Xaa is
        Ser or Arg."

(ix) FEATURE:
    (A) NAME/KEY: Peptide
    (B) LOCATION: 6
    (D) OTHER INFORMATION: /note= "Amino Acid 6 wherein Xaa is
        Glu or Asp."

(ix) FEATURE:
    (A) NAME/KEY: Peptide
    (B) LOCATION: 8
    (D) OTHER INFORMATION: /note= "Amino Acid 8 wherein Xaa is
        Arg or Leu."

(ix) FEATURE:
    (A) NAME/KEY: Peptide
    (B) LOCATION: 15
    (D) OTHER INFORMATION: /note= "Amino Acid 15 wherein Xaa
        is Glu or Gly."

(x) PUBLICATION INFORMATION:
    (H) DOCUMENT NUMBER: WO 92/13884
    (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

```
Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln
1               5                   10                  15

Gln
```

(2) INFORMATION FOR SEQ ID NO:3:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 2
        (D) OTHER INFORMATION: /note= "Amino Acid 2 wherein Xaa is
            Ser or Arg."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 7
        (D) OTHER INFORMATION: /note= "Amino Acid 7 wherein Xaa is
            Glu or Asp."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 9
        (D) OTHER INFORMATION: /note= "Amino Acid 9 wherein Xaa is
            Arg or Leu."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 16
        (D) OTHER INFORMATION: /note= "Amino Acid 16 wherein Xaa
            is Glu or Gly."

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

```
Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa
1               5                   10                  15

Gln
```

(2) INFORMATION FOR SEQ ID NO:4:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single

```
          (D)  TOPOLOGY: linear

    (ii)  MOLECULE TYPE: peptide

    (ix)  FEATURE:
          (A)  NAME/KEY: Peptide
          (B)  LOCATION: 3
          (D)  OTHER INFORMATION: /note= "Amino Acid 3 wherein Xaa is
                  Ser or Arg."

    (ix)  FEATURE:
          (A)  NAME/KEY: Peptide
          (B)  LOCATION: 8
          (D)  OTHER INFORMATION: /note= "Amino Acid 8 wherein Xaa is
                  Glu or Asp."

    (ix)  FEATURE:
          (A)  NAME/KEY: Peptide
          (B)  LOCATION: 10
          (D)  OTHER INFORMATION: /note= "Amino Acid 10 wherein Xaa
                  is Arg or Leu."

    (ix)  FEATURE:
          (A)  NAME/KEY: Peptide
          (B)  LOCATION: 17
          (D)  OTHER INFORMATION: /note= "Amino Acid 17 wherein Xaa
                  is Glu or Gly."

     (x)  PUBLICATION INFORMATION:
          (H)  DOCUMENT NUMBER: WO 92/13884
          (J)  PUBLICATION DATE: 20-AUG-1992

    (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:4:

    Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln
    1               5                   10                  15

    Xaa
```

(2) INFORMATION FOR SEQ ID NO:5:

```
     (i)  SEQUENCE CHARACTERISTICS:
          (A)  LENGTH: 17 amino acids
          (B)  TYPE: amino acid
          (C)  STRANDEDNESS: single
          (D)  TOPOLOGY: linear

    (ii)  MOLECULE TYPE: peptide

    (ix)  FEATURE:
          (A)  NAME/KEY: Peptide
          (B)  LOCATION: 1
          (D)  OTHER INFORMATION: /note= "Amino Acid 1 wherein Xaa is
                  Glu or Gly."

    (ix)  FEATURE:
```

```
          (A)  NAME/KEY: Peptide
          (B)  LOCATION: 4
          (D)  OTHER INFORMATION: /note= "Amino Acid 4 wherein Xaa is
               Ser or Arg."

    (ix)  FEATURE:
          (A)  NAME/KEY: Peptide
          (B)  LOCATION: 9
          (D)  OTHER INFORMATION: /note= "Amino Acid 9 wherein Xaa is
               Glu or Asp."

    (ix)  FEATURE:
          (A)  NAME/KEY: Peptide
          (B)  LOCATION: 11
          (D)  OTHER INFORMATION: /note= "Amino Acid 11 wherein Xaa
               is Arg or Leu."

     (x)  PUBLICATION INFORMATION:
          (H)  DOCUMENT NUMBER: WO 92/13884
          (J)  PUBLICATION DATE: 20-AUG-1992

   (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:5:

   Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu
   1                   5                   10                  15

   Gln

(2)  INFORMATION FOR SEQ ID NO:6:

    (i)  SEQUENCE CHARACTERISTICS:
          (A)  LENGTH: 17 amino acids
          (B)  TYPE: amino acid
          (C)  STRANDEDNESS: single
          (D)  TOPOLOGY: linear

   (ii)  MOLECULE TYPE: peptide

   (ix)  FEATURE:
          (A)  NAME/KEY: Peptide
          (B)  LOCATION: 2
          (D)  OTHER INFORMATION: /note= "Amino Acid 2 wherein Xaa is
               Glu or Gly."

   (ix)  FEATURE:
          (A)  NAME/KEY: Peptide
          (B)  LOCATION: 5

          (D)  OTHER INFORMATION: /note= "Amino Acid 5 wherein Xaa is
               Ser or Arg."

   (ix)  FEATURE:
          (A)  NAME/KEY: Peptide
          (B)  LOCATION: 10
          (D)  OTHER INFORMATION: /note= "Amino Acid 10 wherein Xaa
               is Glu or Asp."
```

(ix) FEATURE:
    (A) NAME/KEY: Peptide
    (B) LOCATION: 12
    (D) OTHER INFORMATION: /note= "Amino Acid 12 wherein Xaa
        is Arg or Leu."

 (x) PUBLICATION INFORMATION:
    (H) DOCUMENT NUMBER: WO 92/13884
    (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys
1   5   10   15

Leu

(2) INFORMATION FOR SEQ ID NO:7:

 (i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 17 amino acids
    (B) TYPE: amino acid
    (C) STRANDEDNESS: single
    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
    (A) NAME/KEY: Peptide
    (B) LOCATION: 3
    (D) OTHER INFORMATION: /note= "Amino Acid 3 wherein Xaa is
        Glu or Gly."

(ix) FEATURE:
    (A) NAME/KEY: Peptide
    (B) LOCATION: 6
    (D) OTHER INFORMATION: /note= "Amino Acid 6 wherein Xaa is
        Ser or Arg."

(ix) FEATURE:
    (A) NAME/KEY: Peptide
    (B) LOCATION: 11
    (D) OTHER INFORMATION: /note= "Amino Acid 11 wherein Xaa
        is Glu or Asp."

(ix) FEATURE:
    (A) NAME/KEY: Peptide
    (B) LOCATION: 13
    (D) OTHER INFORMATION: /note= "Amino Acid 13 wherein Xaa
        is Arg or Leu."

 (x) PUBLICATION INFORMATION:
    (H) DOCUMENT NUMBER: WO 92/13884
    (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

```
Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu
1               5                   10              15

Lys
```

(2) INFORMATION FOR SEQ ID NO:8:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 4
        (D) OTHER INFORMATION: /note= "Amino Acid 4 wherein Xaa is
            Glu or Gly."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 7
        (D) OTHER INFORMATION: /note= "Amino Acid 7 wherein Xaa is
            Ser or Arg."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 12
        (D) OTHER INFORMATION: /note= "Amino Acid 12 wherein Xaa
            is Glu or Asp."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 14
        (D) OTHER INFORMATION: /note= "Amino Acid 14 wherein Xaa
            is Arg or Leu."

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

```
Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys
1               5                   10              15

Glu
```

(2) INFORMATION FOR SEQ ID NO:9:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single

            (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (ix) FEATURE:
            (A) NAME/KEY: Peptide
            (B) LOCATION: 5
            (D) OTHER INFORMATION: /note= "Amino Acid 5 wherein Xaa is
                    Glu or Gly."

    (ix) FEATURE:
            (A) NAME/KEY: Peptide
            (B) LOCATION: 8
            (D) OTHER INFORMATION: /note= "Amino Acid 8 wherein Xaa is
                    Ser or Arg."

    (ix) FEATURE:
            (A) NAME/KEY: Peptide
            (B) LOCATION: 13
            (D) OTHER INFORMATION: /note= "Amino Acid 13 wherein Xaa
                    is Glu or Asp."

    (ix) FEATURE:
            (A) NAME/KEY: Peptide
            (B) LOCATION: 15
            (D) OTHER INFORMATION: /note= "Amino Acid 15 wherein Xaa
                    is Arg or Leu."

     (x) PUBLICATION INFORMATION:
            (H) DOCUMENT NUMBER: WO 92/13884
            (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

    Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala
    1   5   10   15

    Lys

(2) INFORMATION FOR SEQ ID NO:10:

    (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 17 amino acids
            (B) TYPE: amino acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (ix) FEATURE:
            (A) NAME/KEY: Peptide
            (B) LOCATION: 6
            (D) OTHER INFORMATION: /note= "Amino Acid 6 wherein Xaa is
                    Glu or Gly."

    (ix) FEATURE:

            (A) NAME/KEY: Peptide
            (B) LOCATION: 9
            (D) OTHER INFORMATION: /note= "Amino Acid 9 wherein Xaa is
                 Ser or Arg."

     (ix) FEATURE:
            (A) NAME/KEY: Peptide
            (B) LOCATION: 14
            (D) OTHER INFORMATION: /note= "Amino Acid 14 wherein Xaa
                 is Glu or Asp."

     (ix) FEATURE:
            (A) NAME/KEY: Peptide
            (B) LOCATION: 16
            (D) OTHER INFORMATION: /note= "Amino Acid 16 wherein Xaa
                 is Arg or Leu."

     (x) PUBLICATION INFORMATION:
            (H) DOCUMENT NUMBER: WO 92/13884
            (J) PUBLICATION DATE: 20-AUG-1992

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

     Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa
     1   5   10   15

     Ala

(2) INFORMATION FOR SEQ ID NO:11:

     (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 17 amino acids
            (B) TYPE: amino acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (ix) FEATURE:
            (A) NAME/KEY: Peptide
            (B) LOCATION: 7
            (D) OTHER INFORMATION: /note= "Amino Acid 7 wherein Xaa is
                 Glu or Gly."

    (ix) FEATURE:
            (A) NAME/KEY: Peptide
            (B) LOCATION: 10
            (D) OTHER INFORMATION: /note= "Amino Acid 10 wherein Xaa
                 is Ser or Arg."

    (ix) FEATURE:
            (A) NAME/KEY: Peptide
            (B) LOCATION: 15
            (D) OTHER INFORMATION: /note= "Amino Acid 15 wherein Xaa
                 is Glu or Asp."

(ix) FEATURE:
    (A) NAME/KEY: Peptide
    (B) LOCATION: 17
    (D) OTHER INFORMATION: /note= "Amino Acid 17 wherein Xaa
        is Arg or Leu."

 (x) PUBLICATION INFORMATION:
    (H) DOCUMENT NUMBER: WO 92/13884
    (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

```
Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg
1               5                   10                  15

Xaa
```

(2) INFORMATION FOR SEQ ID NO:12:

 (i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 17 amino acids
    (B) TYPE: amino acid
    (C) STRANDEDNESS: single
    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:
    (A) NAME/KEY: Peptide
    (B) LOCATION: 1
    (D) OTHER INFORMATION: /note= "Amino Acid 1 wherein Xaa is
        Arg or Leu."

(ix) FEATURE:
    (A) NAME/KEY: Peptide
    (B) LOCATION: 8
    (D) OTHER INFORMATION: /note= "Amino Acid 8 wherein Xaa is
        Glu or Gly."

(ix) FEATURE:
    (A) NAME/KEY: Peptide
    (B) LOCATION: 11
    (D) OTHER INFORMATION: /note= "Amino Acid 11 wherein Xaa
        is Ser or Arg."

(ix) FEATURE:
    (A) NAME/KEY: Peptide
    (B) LOCATION: 16
    (D) OTHER INFORMATION: /note= "Amino Acid 16 wherein Xaa
        is Glu or Asp."

 (x) PUBLICATION INFORMATION:
    (H) DOCUMENT NUMBER: WO 92/13884
    (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

```
Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa
1               5                   10              15

Arg
```

(2) INFORMATION FOR SEQ ID NO:13:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 2
        (D) OTHER INFORMATION: /note= "Amino Acid 2 wherein Xaa is
            Arg or Leu."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 9
        (D) OTHER INFORMATION: /note= "Amino Acid 9 wherein Xaa is
            Glu or Gly."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 12
        (D) OTHER INFORMATION: /note= "Amino Acid 12 wherein Xaa
            is Ser or Arg."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 17
        (D) OTHER INFORMATION: /note= "Amino Acid 17 wherein Xaa
            is Glu or Asp."

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

```
Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln
1               5                   10              15

Xaa
```

(2) INFORMATION FOR SEQ ID NO:14:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single

```
        (D)  TOPOLOGY: linear

   (ii)  MOLECULE TYPE: peptide

   (ix)  FEATURE:
         (A)  NAME/KEY: Peptide
         (B)  LOCATION: 1
         (D)  OTHER INFORMATION: /note= "Amino Acid 1 wherein Xaa is
                 Glu or Asp."

   (ix)  FEATURE:
         (A)  NAME/KEY: Peptide
         (B)  LOCATION: 3
         (D)  OTHER INFORMATION: /note= "Amino Acid 3 wherein Xaa is
                 Arg or Leu."

   (ix)  FEATURE:
         (A)  NAME/KEY: Peptide
         (B)  LOCATION: 10
         (D)  OTHER INFORMATION: /note= "Amino Acid 10 wherein Xaa
                 is Glu or Gly."

   (ix)  FEATURE:
         (A)  NAME/KEY: Peptide
         (B)  LOCATION: 13
         (D)  OTHER INFORMATION: /note= "Amino Acid 13 wherein Xaa
                 is Ser or Arg."

    (x)  PUBLICATION INFORMATION:
         (H)  DOCUMENT NUMBER: WO 92/13884
         (J)  PUBLICATION DATE: 20-AUG-1992

   (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:14:

   Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu
   1               5                   10                  15

   Gln


(2)  INFORMATION FOR SEQ ID NO:15:

    (i)  SEQUENCE CHARACTERISTICS:
         (A)  LENGTH: 17 amino acids
         (B)  TYPE: amino acid
         (C)  STRANDEDNESS: single
         (D)  TOPOLOGY: linear

   (ii)  MOLECULE TYPE: peptide

   (ix)  FEATURE:
         (A)  NAME/KEY: Peptide
         (B)  LOCATION: 2
         (D)  OTHER INFORMATION: /note= "Amino Acid 2 wherein Xaa is
                 Glu or Asp."

   (ix)  FEATURE:
```

             (A) NAME/KEY: Peptide
             (B) LOCATION: 4
             (D) OTHER INFORMATION: /note= "Amino Acid 4 wherein Xaa is
                  Arg or Leu."

     (ix) FEATURE:
             (A) NAME/KEY: Peptide
             (B) LOCATION: 11
             (D) OTHER INFORMATION: /note= "Amino Acid 11 wherein Xaa
                  is Glu or Gly."

     (ix) FEATURE:
             (A) NAME/KEY: Peptide
             (B) LOCATION: 14
             (D) OTHER INFORMATION: /note= "Amino Acid 14 wherein Xaa
                  is Ser or Arg."

      (x) PUBLICATION INFORMATION:
             (H) DOCUMENT NUMBER: WO 92/13884
             (J) PUBLICATION DATE: 20-AUG-1992

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

     Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu
     1   5   10   15

     Glu

(2) INFORMATION FOR SEQ ID NO:16:

     (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 18 amino acids
             (B) TYPE: amino acid
             (C) STRANDEDNESS: single
             (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (ix) FEATURE:
             (A) NAME/KEY: Peptide
             (B) LOCATION: 3
             (D) OTHER INFORMATION: /note= "Amino Acid 3 wherein Xaa is
                  Glu or Asp."

    (ix) FEATURE:
             (A) NAME/KEY: Peptide
             (B) LOCATION: 5
             (D) OTHER INFORMATION: /note= "Amino Acid 5 wherein Xaa is
                  Arg or Leu."

    (ix) FEATURE:
             (A) NAME/KEY: Peptide
             (B) LOCATION: 12
             (D) OTHER INFORMATION: /note= "Amino Acid 12 wherein Xaa
                  is Glu or Gly."

```
    (ix) FEATURE:
         (A) NAME/KEY: Peptide
         (B) LOCATION: 15
         (D) OTHER INFORMATION: /note= "Amino Acid 15 wherein Xaa
                is Ser or Arg."

    (x) PUBLICATION INFORMATION:
         (H) DOCUMENT NUMBER: WO 92/13884
         (J) PUBLICATION DATE: 20-AUG-1992

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

   Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp
   1               5                   10                  15

   Leu
```

(2) INFORMATION FOR SEQ ID NO:17:

```
    (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 17 amino acids
         (B) TYPE: amino acid
         (C) STRANDEDNESS: single
         (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

   (ix) FEATURE:
         (A) NAME/KEY: Peptide
         (B) LOCATION: 4
         (D) OTHER INFORMATION: /note= "Amino Acid 4 wherein Xaa is
                Glu or Asp."

   (ix) FEATURE:
         (A) NAME/KEY: Peptide
         (B) LOCATION: 6
         (D) OTHER INFORMATION: /note= "Amino Acid 6 wherein Xaa is
                Arg or Leu."

   (ix) FEATURE:
         (A) NAME/KEY: Peptide
         (B) LOCATION: 13
         (D) OTHER INFORMATION: /note= "Amino Acid 13 wherein Xaa
                is Glu or Gly."

   (ix) FEATURE:
         (A) NAME/KEY: Peptide
         (B) LOCATION: 16
         (D) OTHER INFORMATION: /note= "Amino Acid 16 wherein Xaa
                is Ser or Arg."

    (x) PUBLICATION INFORMATION:
         (H) DOCUMENT NUMBER: WO 92/13884
         (J) PUBLICATION DATE: 20-AUG-1992

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:
```

```
Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa
1               5               10              15
```

Asp

(2) INFORMATION FOR SEQ ID NO:18:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 5
        (D) OTHER INFORMATION: /note= "Amino Acid 5 wherein Xaa is
            Glu or Asp."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 7
        (D) OTHER INFORMATION: /note= "Amino Acid 7 wherein Xaa is
            Arg or Leu."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 14
        (D) OTHER INFORMATION: /note= "Amino Acid 14 wherein Xaa
            is Glu or Gly."

    (ix) FEATURE:
        (A) NAME/KEY: Peptide
        (B) LOCATION: 17
        (D) OTHER INFORMATION: /note= "Amino Acid 17 wherein Xaa
            is Ser or Arg."

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

```
Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln
1               5               10              15
```

Xaa

(2) INFORMATION FOR SEQ ID NO:19:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 107 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single

    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

  (x) PUBLICATION INFORMATION:
     (H) DOCUMENT NUMBER: WO 92/13884
     (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

```
Arg Lys Ala Asp Thr Lys Lys Asn Leu Glu Arg Lys Lys Glu His Gly
1               5                   10              15

Asp Ile Leu Ala Glu Asp Leu Tyr Gly Arg Leu Glu Ile Pro Ala Ile
            20              25              30

Glu Leu Pro Ser Glu Asn Glu Arg Gly Tyr Tyr Ile Pro His Gln Ser
        35              40              45

Ser Leu Pro Gln Asp Asn Arg Gly Asn Ser Arg Asp Ser Lys Glu Ile
    50              55              60

Ser Ile Ile Glu Lys Thr Asn Arg Glu Ser Ile Thr Thr Asn Val Glu
65              70              75              80

Gly Arg Arg Asp Ile His Lys Gly His Leu Glu Glu Lys Lys Asp Gly
            85              90              95

Ser Ile Lys Pro Glu Gln Lys Glu Asp Lys Ser
        100             105
```

(2) INFORMATION FOR SEQ ID NO:20:

  (i) SEQUENCE CHARACTERISTICS:
     (A) LENGTH: 117 amino acids
     (B) TYPE: amino acid
     (C) STRANDEDNESS: single
     (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

  (x) PUBLICATION INFORMATION:
     (H) DOCUMENT NUMBER: WO 92/13884
     (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

```
Leu Gln Glu Gln Gln Arg Asp Leu Glu Gln Arg Lys Ala Asp Thr Lys
1               5                   10              15

Lys Asn Leu Glu Arg Lys Lys Glu His Gly Asp Ile Leu Ala Glu Asp
            20              25              30

Leu Tyr Gly Arg Leu Glu Ile Pro Ala Ile Glu Leu Pro Ser Glu Asn
        35              40              45
```

```
Glu Arg Gly Tyr Tyr Ile Pro His Gln Ser Ser Leu Pro Gln Asp Asn
    50              55              60

Arg Gly Asn Ser Arg Asp Ser Lys Glu Ile Ser Ile Ile Glu Lys Thr
65              70              75              80

Asn Arg Glu Ser Ile Thr Thr Asn Val Glu Gly Arg Arg Asp Ile His
            85              90              95

Lys Gly His Leu Glu Glu Lys Lys Asp Gly Ser Ile Lys Pro Glu Gln
            100             105             110

Lys Glu Asp Lys Ser
        115
```

(2) INFORMATION FOR SEQ ID NO:21:

  (i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 27 amino acids
    (B) TYPE: amino acid
    (C) STRANDEDNESS: single
    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

  (x) PUBLICATION INFORMATION:
    (H) DOCUMENT NUMBER: WO 92/13884
    (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

```
Asp Thr Lys Lys Asn Leu Glu Arg Lys Lys Glu His Gly Asp Ile Leu
1               5               10              15

Ala Glu Asp Leu Tyr Gly Arg Leu Glu Ile Pro
        20              25
```

(2) INFORMATION FOR SEQ ID NO:22:

  (i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 24 amino acids
    (B) TYPE: amino acid
    (C) STRANDEDNESS: single
    (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

  (x) PUBLICATION INFORMATION:
    (H) DOCUMENT NUMBER: WO 92/13884
    (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

```
Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Arg Asp Leu Glu
1               5               10              15
```

Gln Arg Lys Ala Asp Thr Lys Lys
           20

(2) INFORMATION FOR SEQ ID NO:23:

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 31 amino acids
       (B) TYPE: amino acid
       (C) STRANDEDNESS: single
       (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

    (x) PUBLICATION INFORMATION:
       (H) DOCUMENT NUMBER: WO 92/13884
       (J) PUBLICATION DATE: 20-AUG-1992

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

Asn Ser Arg Asp Ser Lys Glu Ile Ser Ile Ile Glu Lys Thr Asn Arg
1   5   10   15

Glu Ser Ile Thr Thr Asn Val Glu Gly Arg Arg Asp Ile His Lys
           20   25   30

(2) INFORMATION FOR SEQ ID NO:24:

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 151 amino acids
       (B) TYPE: amino acid
       (C) STRANDEDNESS: single
       (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

    (x) PUBLICATION INFORMATION:
       (H) DOCUMENT NUMBER: WO 92/13884
       (J) PUBLICATION DATE: 20-AUG-1992

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

Arg Asp Glu Leu Phe Asn Glu Leu Leu Asn Ser Val Asp Val Asn Gly
1   5   10   15

Glu Val Lys Glu Asn Ile Leu Glu Glu Ser Gln Val Asn Asp Asp Ile
           20   25   30

Phe Asn Ser Leu Val Lys Ser Val Gln Gln Glu Gln Gln His Asn Val
           35   40   45

Glu Glu Lys Val Glu Glu Ser Val Glu Glu Asn Asp Glu Glu Ser Val
           50   55   60

Glu Glu Asn Val Glu Glu Asn Val Glu Glu Asn Asp Asp Gly Ser Val
65   70   75   80

Ala Ser Ser Val Glu Glu Ser Ile Ala Ser Ser Val Asp Glu Ser Ile
              85   90   95

Asp Ser Ser Ile Glu Glu Asn Val Ala Pro Thr Val Glu Glu Ile Val
             100   105   110

Ala Pro Thr Val Glu Glu Ile Val Ala Pro Ser Val Val Glu Lys Cys
         115   120   125

Ala Pro Ser Val Glu Glu Ser Val Ala Pro Ser Val Glu Glu Ser Val
     130   135   140

Ala Glu Met Leu Lys Glu Arg
145   150

(2) INFORMATION FOR SEQ ID NO:25:

    (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 47 amino acids
         (B) TYPE: amino acid
         (C) STRANDEDNESS: single
         (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

    (x) PUBLICATION INFORMATION:
         (H) DOCUMENT NUMBER: WO 92/13884
         (J) PUBLICATION DATE: 20-AUG-1992

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

Arg Asp Glu Leu Phe Asn Glu Leu Leu Asn Ser Val Asp Val Asn Gly
1   5   10   15

Glu Val Lys Glu Asn Ile Leu Glu Glu Ser Gln Val Asn Asp Asp Ile
             20   25   30

Phe Asn Ser Leu Val Lys Ser Val Gln Gln Glu Gln Gln His Asn
             35   40   45

(2) INFORMATION FOR SEQ ID NO:26:

    (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 26 amino acids
         (B) TYPE: amino acid
         (C) STRANDEDNESS: single
         (D) TOPOLOGY: linear

   (ii) MOLECULE TYPE: peptide

    (x) PUBLICATION INFORMATION:
         (H) DOCUMENT NUMBER: WO 92/13884
         (J) PUBLICATION DATE: 20-AUG-1992

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

```
Asp Glu Leu Phe Asn Glu Leu Leu Asn Ser Val Asp Val Asn Gly Glu
1               5                   10                  15

Val Lys Glu Asn Ile Leu Glu Glu Ser Gln
            20                  25
```

(2) INFORMATION FOR SEQ ID NO:27:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 27 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

```
Leu Glu Glu Ser Gln Val Asn Asp Asp Ile Phe Ser Asn Ser Leu Val
1               5                   10                  15

Lys Ser Val Gln Gln Glu Gln Gln His Asn Val
            20                  25
```

(2) INFORMATION FOR SEQ ID NO:28:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 27 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

```
Val Glu Lys Cys Ala Pro Ser Val Glu Glu Ser Val Ala Pro Ser Val
1               5                   10                  15

Glu Glu Ser Val Ala Glu Met Leu Lys Glu Arg
            20                  25
```

(2) INFORMATION FOR SEQ ID NO:29:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 17 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(x) PUBLICATION INFORMATION:
    (H) DOCUMENT NUMBER: WO 92/13884
    (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

TTGTTCTAGA TCGCTTT   17

(2) INFORMATION FOR SEQ ID NO:30:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 15 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA (genomic)

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

AAAGAAGATA AATCT   15

(2) INFORMATION FOR SEQ ID NO:31:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 316 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: peptide

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln
1   5   10   15

Gln Ser Asp Leu Glu Gln Asp Arg Leu Ala Lys Glu Lys Leu Gln Glu
            20   25   30

Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln
      35   40   45

```
Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu
    50              55              60
```

```
Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys
65              70              75              80
```

```
Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Asp Arg Leu Ala Lys Glu
        85              90              95
```

```
Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys
        100             105             110
```

```
Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala
        115             120             125
```

```
Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg
    130             135             140
```

```
Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg
145             150             155             160
```

```
Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu
        165             170             175
```

```
Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln
        180             185             190
```

```
Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Arg Asp Leu Glu
        195             200             205
```

```
Gln Arg Lys Ala Asp Thr Lys Lys Asn Leu Glu Arg Lys Lys Glu His
    210             215             220
```

```
Gly Asp Ile Leu Ala Glu Asp Leu Tyr Gly Arg Leu Glu Ile Pro Ala
225             230             235             240
```

```
Ile Glu Leu Pro Ser Glu Asn Glu Arg Gly Tyr Tyr Ile Pro His Gln
            245             250             255
```

```
Ser Ser Leu Pro Gln Asp Asn Arg Gly Asn Ser Arg Asp Ser Lys Glu
            260             265             270
```

```
Ile Ser Ile Ile Glu Lys Thr Asn Arg Glu Ser Ile Thr Thr Asn Val
        275             280             285
```

```
Glu Gly Arg Arg Asp Ile His Lys Gly His Leu Glu Glu Lys Lys Asp
    290             295             300
```

```
Gly Ser Ile Lys Pro Glu Gln Lys Glu Asp Lys Ser
305             310             315
```

(2) INFORMATION FOR SEQ ID NO:32:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 950 base pairs
        (B) TYPE: nucleic acid

        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA (genomic)

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

AAAGCGATCT AGAACAAGAG AGACGTGCTA AAGAAAAGTT GCAAGAACAA CAAAGCGATT   60

TAGAACAAGA TAGACTTGCT AAAGAAAAGT TACAAGAGCA GCAAAGCGAT TTAGAACAAG   120

AGAGACTTGC TAAAGAAAAG TTGCAAGAAC AACAAAGCGA TCTAGAACAA GAGAGACGTG   180

CTAAAGAAAA GTTGCAAGAA CAACAAAGCG ATTTAGAACA AGAGAGACGT GCTAAAGAAA   240

AGTTGCAAGA ACAACAAAGC GATTTAGAAC AAGATAGACT TGCTAAAGAA AAGTTACAAG   300

AGCAGCAAAG CGATTTAGAA CAAGAGAGAC GTGCTAAAGA AAAGTTGCAA GAACAACAAA   360

GCGATTTAGA ACAAGAGAGA CGTGCTAAAG AAAAGTTGCA AGAACAACAA AGCGATTTAG   420

AACAAGAGAG ACTTGCTAAA GAAAAGTTGC AAGAACAACA AAGCGATTTA GAACAAGAGA   480

GACGTGCTAA AGAAAAGTTG CAAGAACAAC AAAGCGATTT AGAACAAGAG AGACGTGCTA   540

AAGAAAAGTT GCAAGAACAA CAAAGCGATT TAGAACAAGA GAGACGTGCT AAAGAAAAGT   600

TGCAAGAGCA GCAAAGAGAT TTAGAACAAA GGAAGGCTGA TACGAAAAAA AATTTAGAAA   660

GAAAAAGGA ACATGGAGAT ATATTAGCAG AGGATTTATA TGGTCGTTTA GAAATACCAG   720

CTATAGAACT TCCATCAGAA AATGAACGTG GATATTATAT ACCACATCAA TCTTCTTTAC   780

CTCAGGACAA CAGAGGGAAT AGTAGAGATT CCAAGGAAAT ATCTATAATA GAAAAAACAA   840

ATAGAGAATC TATTACAACA AATGTTGAAG GACGAAGGGA TATACATAAA CGACATCTTG   900

AAGAAAGAA AGATGGTTCA ATAAAACCAG AACAAAAGA AGATAAATCT   950

(2) INFORMATION FOR SEQ ID NO:33:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 464 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

        (ii) MOLECULE TYPE: DNA (genomic)

        (x) PUBLICATION INFORMATION:
            (H) DOCUMENT NUMBER: WO 92/13884
            (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

```
GAATTCCGTG ATGAACTTTT TAATGAATTA TTAAATAGTG TAGATGTTAA TGGAGAAGTA      60

AAAGAAAATA TTTTGGAGGA AAGTCAAGTT AATGACGATA TTTTTAATAG TTTAGTAAAA     120

AGTGTTCAAC AAGAACAACA ACACAATGTT GAAGAAAAG TTGAAGAAAG TGTAGAAGAA      180

AATGACGAAG AAAGTGTAGA AGAAAATGTA GAAGAAAATG TAGAAGAAAA TGACGACGGA     240

AGTGTAGCCT CAAGTGTTGA AGAAAGTATA GCTTCAAGTG TTGATGAAAG TATAGATTCA     300

AGTATTGAAG AAAATGTAGC TCCAACTGTT GAAGAAATCG TAGCTCCAAC TGTTGAAGAA     360

ATTGTAGCTC CAAGTGTTGT AGAAAAGTGT GCTCCAAGTG TTGAAGAAAG TGTAGCTCCA     420

AGTGTTGAAG AAAGTGTAGC TGAAATGTTG AAGGAAAGGA ATTC                      464
```

(2) INFORMATION FOR SEQ ID NO:34:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 988 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA (genomic)

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

```
AAAGTATACA TCTTCCTTCT TTACTTCTTA AAATGAAACA TATTTTGTAC ATATCATTTT      60

ACTTTATCCT TGTTAATTTA TTGATATTTC ATATAAATGG AAAGATAATA AAGAATTCTG     120

AAAAAGATGA AATCATAAAA TCTAACTTGA GAAGTGGTTC TTCAAATTCT AGGAATCGAA     180

TAAATGAGGA AAATCACGAG AAGAAACACG TTTTATCTCA TAATTCATAT GAGAAAACTA     240

AAAATAATGA AAATAATAAA TTTTTCGATA AGGATAAAGA GTTAACGATG TCTAATGTAA     300

AAAATGTGTC ACAAACAAAT TTCAAAAGTC TTTTAAGAAA TCTTGGTGTT TCAGAGAATA     360

TATTCCTTAA AGAAAATAAA TTAAATAAGG AAGGGAAATT AATTGAACAC ATAATAAATG     420

ATGATGACGA TAAAAAAAAA TATATTAAAG GGCAAGACGA AAACAGACAA GAAGATCTTG     480

AAGAAAAAGC AGCTAAAGAA AAGTTACAGG GGCAACAAAG CGATTCAGAA CAAGAGAGAC     540

GTGCTAAAGA AAAGTTGCAA GAACAACAAA GCGATTTAGA ACAAGAGAGA CTTGCTAAAG     600

AAAAGTTGCA AGAACAACAA AGCGATTTAG AACAAGAGAG ACGTGCTAAA GAAAAGTTGC     660
```

AAGAACAACA AAGCGATTTA GAACAAGAGA GACTTGCTAA AGAAAAGTTG CAAGAACAAC   720

AAAGCGATTT AGAACAAGAG AGACGTGCTA AAGAAAAGTT GCAAGAACAA CAAAGCGATT   780

TAGAACAAGA GAGACGTGCT AAAGAAAAGT TGCAAGAACA ACAAAGCGAT TTAGAACAAG   840

AGAGACTTGC TAAAGAAAAG TTACAAGAGC AGCAAAGCGA TTTAGAACAA GATAGACTTG   900

CTAAAGAAAA GTTGCAAGAA CAACAAAGCG ATTTAGAACA AGAGAGACGT GCTAAAGAAA   960

GGTTGCAAGA ACAACAAAGC GATTTAGA   988

(2) INFORMATION FOR SEQ ID NO:35:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 12 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

  (ii) MOLECULE TYPE: DNA (genomic)

   (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

ATGAAACATA TT   12

(2) INFORMATION FOR SEQ ID NO:36:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 12 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

  (ii) MOLECULE TYPE: DNA (genomic)

   (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

AAGCGATTTA GA   12

(2) INFORMATION FOR SEQ ID NO:37:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 954 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

```
(ii) MOLECULE TYPE: DNA (genomic)

(ix) FEATURE:
     (A) NAME/KEY: CDS
     (B) LOCATION: 1..954

(x) PUBLICATION INFORMATION:
     (H) DOCUMENT NUMBER: WO 92/13884
     (J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

ATG AAA CAT ATT TTG TAC ATA TCA TTT TAC TTT ATC CTT GTT AAT TTA      48
Met Lys His Ile Leu Tyr Ile Ser Phe Tyr Phe Ile Leu Val Asn Leu
1               5                   10                  15

TTG ATA TTT CAT ATA AAT GGA AAG ATA ATA AAG AAT TCT GAA AAA GAT      96
Leu Ile Phe His Ile Asn Gly Lys Ile Ile Lys Asn Ser Glu Lys Asp
            20                  25                  30

GAA ATC ATA AAA TCT AAC TTG AGA AGT GGT TCT TCA AAT TCT AGG AAT     144
Glu Ile Ile Lys Ser Asn Leu Arg Ser Gly Ser Ser Asn Ser Arg Asn
            35                  40                  45

CGA ATA AAT GAG GAA AAT CAC GAG AAG AAA CAC GTT TTA TCT CAT AAT     192
Arg Ile Asn Glu Glu Asn His Glu Lys Lys His Val Leu Ser His Asn
        50                  55                  60

TCA TAT GAG AAA ACT AAA AAT AAT GAA AAT AAT AAA TTT TTC GAT AAG     240
Ser Tyr Glu Lys Thr Lys Asn Asn Glu Asn Asn Lys Phe Phe Asp Lys
65                  70                  75                  80

GAT AAA GAG TTA ACG ATG TCT AAT GTA AAA AAT GTG TCA CAA ACA AAT     288
Asp Lys Glu Leu Thr Met Ser Asn Val Lys Asn Val Ser Gln Thr Asn
                85                  90                  95

TTC AAA AGT CTT TTA AGA AAT CTT GGT GTT TCA GAG AAT ATA TTC CTT     336
Phe Lys Ser Leu Leu Arg Asn Leu Gly Val Ser Glu Asn Ile Phe Leu
            100                 105                 110

AAA GAA AAT AAA TTA AAT AAG GAA GGG AAA TTA ATT GAA CAC ATA ATA     384
Lys Glu Asn Lys Leu Asn Lys Glu Gly Lys Leu Ile Glu His Ile Ile
            115                 120                 125

AAT GAT GAT GAC GAT AAA AAA AAA TAT ATT AAA GGG CAA GAC GAA AAC     432
Asn Asp Asp Asp Asp Lys Lys Lys Tyr Ile Lys Gly Gln Asp Glu Asn
130                 135                 140

AGA CAA GAA GAT CTT GAA GAA AAA GCA GCT AAA GAA AAG TTA CAG GGG     480
Arg Gln Glu Asp Leu Glu Glu Lys Ala Ala Lys Glu Lys Leu Gln Gly
145                 150                 155                 160

CAA CAA AGC GAT TCA GAA CAA GAG AGA CGT GCT AAA GAA AAG TTG CAA     528
Gln Gln Ser Asp Ser Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln
            165                 170                 175
```

```
GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CTT GCT AAA GAA AAG TTG        576
Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu Ala Lys Glu Lys Leu
            180             185                 190

CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CGT GCT AAA GAA AAG        624
Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys
        195                 200                 205

TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CTT GCT AAA GAA        672
Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu Ala Lys Glu
    210                 215                 220

AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CGT GCT AAA        720
Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys
225                 230                 235                 240

GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CGT GCT        768
Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala
                    245                 250                 255

AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CTT        816
Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu
                260                 265                 270

GCT AAA GAA AAG TTA CAA GAG CAG CAA AGC GAT TTA GAA CAA GAT AGA        864
Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Asp Arg
        275                 280                 285

CTT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG        912
Leu Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu
    290                 295                 300

AGA CGT GCT AAA GAA AGG TTG CAA GAA CAA CAA AGC GAT TTA              954
Arg Arg Ala Lys Glu Arg Leu Gln Glu Gln Gln Ser Asp Leu
305                 310                 315
```

(2) INFORMATION FOR SEQ ID NO:38:

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1493 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear

       (ii) MOLECULE TYPE: DNA (genomic)

        (x) PUBLICATION INFORMATION:
            (H) DOCUMENT NUMBER: WO 92/13884
            (J) PUBLICATION DATE: 20-AUG-1992

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

```
CAAGAACAAC AAAGCGATCT AGAACAAGAG AGACGTGCTA AGAAAAGTT GCAAGAACAA        60

CAAAGCGATT TAGAACAAGA TAGACTTGCT AAAGAAAAGT TACAAGAGCA GCAAAGCGAT       120
```

```
TTAGAACAAG AGAGACTTGC TAAGAAAAGT TGCAAGAACA ACAAAGCGAT CTAGAACAAG    180

AGAGACGTGC TAAAGAAAG TTGCAAGAAC AACAAAGCGA TTTAGAACAA GAGAGACGTG     240

CTAAAGAAAA GTTGCAAGAA CAACAAAGCG ATTTAGAACA AGATAGACTT GCTAAAGAAA    300

AGTTACAAGA GCAGCAAAGC GATTTAGAAC AAGAGAGACG TGCTAAAGAA AAGTTGCAAG    360

AACAACAAAG CGATTTAGAA CAAGAGAGAC GTGCTAAGAA AAGTTGCAAG AACAACAAAG    420

CGATTTAGAA CAAGAGAGAC TTGCTAAAGA AAAGTTGCAA GAACAACAAA GCGATTTAGA    480

ACAAGAGAGA CGTGCTAAAG AAAAGTTGCA AGAACAACAA AGCGATTTAG AACAAGAGAG    540

ACGTGCTAAG AAAAGTTGCA AGAACAACAA AGCGATTTAG AACAAGAGAG ACGTGCTAAA    600

GAAAAGTTGC AAGAGCAGCA AAGAGATTTA GAACAAAGGA AGGCTGATAC GAAAAAAAT     660

TTAGAAGAA AAAAGGAACA TGGAGATATA TTAGCAGAGG ATTTATATGG TCGTTTAGAA     720

ATACCAGCTA TAGAACTTCC ATCAGAAAAT GAACGTGGAT ATTATATACC ACATCAATCT    780

TCTTTACCTC AGGACAACAG AGGGAATAGT AGAGATTCCA AGGAAATATC TATAATAGAA    840

AAACAAATA GAGAATCTAT TACAACAAAT GTTGAAGGAC GAAGGGATAT ACATAAAGGA     900

CATCTTGAAG AAAAGAAAGA TGGTTCAATA AAACCAGAAC AAAAAGAAGA TAAATCTGCT    960

GACATACAAA ATCATACATT AGAGACAGTA AATATTTCTG ATGTTAATGA TTTTCAAATA   1020

AGTAAGTATG AGGATGAAAT AAGTGCTGAA TATGACGATT CATTAATAGA TGAAGAAGAA   1080

GATGATGAAG ACTTAGACGA ATTTAAGCCT ATTGTGCAAT ATGACAATTT CCAAGATGAA   1140

GAAAACATAG GAATTTATAA AGAACTAGAA GATTTGATAG AGAAAAATGA AAATTTAGAT   1200

GATTTAGATG AAGGAATAGA AAAATCATCA GAAGAATTAT CTGAACAAAA AATAAAAAAA   1260

GGAAAGAAAT ATGAAAAAAC AAAGGATAAT AATTTTAAAC CAAATGATAA AGTTTGTAT    1320

GATGAGCATA TTAAAAAATA TAAAAATGAT AAGCAGGTTA ATAAGGAAAA GGAAAAATTC   1380

ATAAAATCAT TGTTTCATAT ATTTGACGGA GACAATGAAA TTTTACAGAT CGTGGATGAG   1440

TTATCTGAAG ATATAACTAA ATATTTTATG AAACTATAAA AGGTTATATA TTT          1493
```

(2) INFORMATION FOR SEQ ID NO:39:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 12 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA (genomic)

         (x) PUBLICATION INFORMATION:
              (H) DOCUMENT NUMBER: WO 92/13884
              (J) PUBLICATION DATE: 20-AUG-1992

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

CAAGAACAAC AA   12

(2) INFORMATION FOR SEQ ID NO:40:

      (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 12 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: single
           (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: DNA (genomic)

      (x) PUBLICATION INFORMATION:
           (H) DOCUMENT NUMBER: WO 92/13884
           (J) PUBLICATION DATE: 20-AUG-1992

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

GGTTATATAT TT   12

(2) INFORMATION FOR SEQ ID NO:41:

      (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 1482 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: single
           (D) TOPOLOGY: linear

     (ii) MOLECULE TYPE: DNA (genomic)

     (ix) FEATURE:
           (A) NAME/KEY: CDS
           (B) LOCATION: 1..1482

      (x) PUBLICATION INFORMATION:
           (H) DOCUMENT NUMBER: WO 92/13884
           (J) PUBLICATION DATE: 20-AUG-1992

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

CAA GAA CAA CAA AGC GAT CTA GAA CAA GAG AGA CGT GCT AAA GAA AAG   48
Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys
  1   5   10   15

TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAT AGA CTT GCT AAA GAA   96
Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Asp Arg Leu Ala Lys Glu
             20   25   30

AAG TTA CAA GAG CAG CAA AGC GAT TTA GAA CAA GAG AGA CTT GCT AAA   144
Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu Ala Lys

```
              35                          40                          45

GAA AAG TTG CAA GAA CAA CAA AGC GAT CTA GAA CAA GAG AGA CGT GCT          192
Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala
         50                          55                          60

AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CGT          240
Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg
 65                          70                          75          80

GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAT AGA          288
Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Asp Arg
             85                          90                          95

CTT GCT AAA GAA AAG TTA CAA GAG CAG CAA AGC GAT TTA GAA CAA GAG          336
Leu Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu
             100                         105                         110

AGA CGT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA          384
Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln
             115                         120                         125

GAG AGA CGT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA          432
Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu
     130                         135                         140

CAA GAG AGA CTT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA          480
Gln Glu Arg Leu Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu
145                         150                         155          160

GAA CAA GAG AGA CGT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT          528
Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp
                 165                         170                         175

TTA GAA CAA GAG AGA CGT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC          576
Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser
             180                         185                         190

GAT TTA GAA CAA GAG AGA CGT GCT AAA GAA AAG TTG CAA GAG CAG CAA          624
Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln
         195                         200                         205

AGA GAT TTA GAA CAA AGG AAG GCT GAT ACG AAA AAA AAT TTA GAA AGA          672
Arg Asp Leu Glu Gln Arg Lys Ala Asp Thr Lys Lys Asn Leu Glu Arg
     210                         215                         220

AAA AAG GAA CAT GGA GAT ATA TTA GCA GAG GAT TTA TAT GGT CGT TTA          720
Lys Lys Glu His Gly Asp Ile Leu Ala Glu Asp Leu Tyr Gly Arg Leu
225                         230                         235          240

GAA ATA CCA GCT ATA GAA CTT CCA TCA GAA AAT GAA CGT GGA TAT TAT          768
Glu Ile Pro Ala Ile Glu Leu Pro Ser Glu Asn Glu Arg Gly Tyr Tyr
             245                         250                         255

ATA CCA CAT CAA TCT TCT TTA CCT CAG GAC AAC AGA GGG AAT AGT AGA          816
Ile Pro His Gln Ser Ser Leu Pro Gln Asp Asn Arg Gly Asn Ser Arg
```

```
                260                         265                         270

GAT TCC AAG GAA ATA TCT ATA ATA GAA AAA ACA AAT AGA GAA TCT ATT        864
Asp Ser Lys Glu Ile Ser Ile Ile Glu Lys Thr Asn Arg Glu Ser Ile
        275                 280                 285

ACA ACA AAT GTT GAA GGA CGA AGG GAT ATA CAT AAA GGA CAT CTT GAA        912
Thr Thr Asn Val Glu Gly Arg Arg Asp Ile His Lys Gly His Leu Glu
        290                 295                 300

GAA AAG AAA GAT GGT TCA ATA AAA CCA GAA CAA AAA GAA GAT AAA TCT        960
Glu Lys Lys Asp Gly Ser Ile Lys Pro Glu Gln Lys Glu Asp Lys Ser
305                 310                 315                 320

GCT GAC ATA CAA AAT CAT ACA TTA GAG ACA GTA AAT ATT TCT GAT GTT       1008
Ala Asp Ile Gln Asn His Thr Leu Glu Thr Val Asn Ile Ser Asp Val
                325                 330                 335

AAT GAT TTT CAA ATA AGT AAG TAT GAG GAT GAA ATA AGT GCT GAA TAT       1056
Asn Asp Phe Gln Ile Ser Lys Tyr Glu Asp Glu Ile Ser Ala Glu Tyr
            340                 345                 350

GAC GAT TCA TTA ATA GAT GAA GAA GAA GAT GAT GAA GAC TTA GAC GAA       1104
Asp Asp Ser Leu Ile Asp Glu Glu Glu Asp Asp Glu Asp Leu Asp Glu
            355                 360                 365

TTT AAG CCT ATT GTG CAA TAT GAC AAT TTC CAA GAT GAA GAA AAC ATA       1152
Phe Lys Pro Ile Val Gln Tyr Asp Asn Phe Gln Asp Glu Glu Asn Ile
        370                 375                 380

GGA ATT TAT AAA GAA CTA GAA GAT TTG ATA GAG AAA AAT GAA AAT TTA       1200
Gly Ile Tyr Lys Glu Leu Glu Asp Leu Ile Glu Lys Asn Glu Asn Leu
385                 390                 395                 400

GAT GAT TTA GAT GAA GGA ATA GAA AAA TCA TCA GAA GAA TTA TCT GAA       1248
Asp Asp Leu Asp Glu Gly Ile Glu Lys Ser Ser Glu Glu Leu Ser Glu
                405                 410                 415

GAA AAA ATA AAA AAA GGA AAG AAA TAT GAA AAA ACA AAG GAT AAT AAT       1296
Glu Lys Ile Lys Lys Gly Lys Lys Tyr Glu Lys Thr Lys Asp Asn Asn
            420                 425                 430

TTT AAA CCA AAT GAT AAA AGT TTG TAT GAT GAG CAT ATT AAA AAA TAT       1344
Phe Lys Pro Asn Asp Lys Ser Leu Tyr Asp Glu His Ile Lys Lys Tyr
            435                 440                 445

AAA AAT GAT AAG CAG GTT AAT AAG GAA AAG GAA AAA TTC ATA AAA TCA       1392
Lys Asn Asp Lys Gln Val Asn Lys Glu Lys Glu Lys Phe Ile Lys Ser
450                 455                 460

TTG TTT CAT ATA TTT GAC GGA GAC AAT GAA ATT TTA CAG ATC GTG GAT       1440
Leu Phe His Ile Phe Asp Gly Asp Asn Glu Ile Leu Gln Ile Val Asp
465                 470                 475                 480

GAG TTA TCT GAA GAT ATA ACT AAA TAT TTT ATG AAA CTA TAA             1482
Glu Leu Ser Glu Asp Ile Thr Lys Tyr Phe Met Lys Leu
```

485   490

(2) INFORMATION FOR SEQ ID NO:42:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 12 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA (genomic)

    (ix) FEATURE:
        (A) NAME/KEY: CDS
        (B) LOCATION: 1..12

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

AAG GTT ATA TAT   12
Lys Val Ile Tyr
  1

(2) INFORMATION FOR SEQ ID NO:43:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 12 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA (genomic)

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

CAAGAACAAC AA   12

(2) INFORMATION FOR SEQ ID NO:44:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 12 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA (genomic)

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884

(J) PUBLICATION DATE: 20-AUG-1992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

ATGAAACTAT AA   12

(2) INFORMATION FOR SEQ ID NO:45:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1482 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) MOLECULE TYPE: DNA (genomic)

    (ix) FEATURE:
        (A) NAME/KEY: CDS
        (B) LOCATION: 1..1482

    (x) PUBLICATION INFORMATION:
        (H) DOCUMENT NUMBER: WO 92/13884
        (J) PUBLICATION DATE: 20-AUG-1992

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

```
CAA GAA CAA CAA AGC GAT CTA GAA CAA GAG AGA CGT GCT AAA GAA AAG        48
Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys
 1               5                  10                  15

TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAT AGA CTT GCT AAA GAA        96
Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Asp Arg Leu Ala Lys Glu
            20                  25                  30

AAG TTA CAA GAG CAG CAA AGC GAT TTA GAA CAA GAG AGA CTT GCT AAA       144
Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu Ala Lys
            35                  40                  45

GAA AAG TTG CAA GAA CAA CAA AGC GAT CTA GAA CAA GAG AGA CGT GCT       192
Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala
            50                  55                  60

AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAG AGA CGT       240
Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg
 65                  70                  75                  80

GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA GAT AGA       288
Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Asp Arg
                85                  90                  95

CTT GCT AAA GAA AAG TTA CAA GAG CAG CAA AGC GAT TTA GAA CAA GAG       336
Leu Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu
               100                 105                 110

AGA CGT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA CAA       384
Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln
```

```
            115                          120                          125

GAG AGA CGT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA GAA          432
Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu
        130                      135                      140

CAA GAG AGA CTT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT TTA          480
Gln Glu Arg Leu Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu
145                      150                      155                      160

GAA CAA GAG AGA CGT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC GAT          528
Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp
                    165                      170                      175

TTA GAA CAA GAG AGA CGT GCT AAA GAA AAG TTG CAA GAA CAA CAA AGC          576
Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser
                180                      185                      190

GAT TTA GAA CAA GAG AGA CGT GCT AAA GAA AAG TTG CAA GAG CAG CAA          624
Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln
            195                      200                      205

AGA GAT TTA GAA CAA AGG AAG GCT GAT ACG AAA AAA AAT TTA GAA AGA          672
Arg Asp Leu Glu Gln Arg Lys Ala Asp Thr Lys Lys Asn Leu Glu Arg
    210                      215                      220

AAA AAG GAA CAT GGA GAT ATA TTA GCA GAG GAT TTA TAT GGT CGT TTA          720
Lys Lys Glu His Gly Asp Ile Leu Ala Glu Asp Leu Tyr Gly Arg Leu
225                      230                      235                      240

GAA ATA CCA GCT ATA GAA CTT CCA TCA GAA AAT GAA CGT GGA TAT TAT          768
Glu Ile Pro Ala Ile Glu Leu Pro Ser Glu Asn Glu Arg Gly Tyr Tyr
                    245                      250                      255

ATA CCA CAT CAA TCT TCT TTA CCT CAG GAC AAC AGA GGG AAT AGT AGA          816
Ile Pro His Gln Ser Ser Leu Pro Gln Asp Asn Arg Gly Asn Ser Arg
                    260                      265                      270

GAT TCC AAG GAA ATG TCT ATA ATA GAA AAA ACA AAT AGA GAA TCT ATT          864
Asp Ser Lys Glu Met Ser Ile Ile Glu Lys Thr Asn Arg Glu Ser Ile
                275                      280                      285

ACA ACA AAT GTT GAA GGA CGA AGG GAT ATA CAT AAA GGA CAT CTT GAA          912
Thr Thr Asn Val Glu Gly Arg Arg Asp Ile His Lys Gly His Leu Glu
    290                      295                      300

GAA AAG AAA GAT GGT TCA ATA AAA CCA GAA CAA AAA GAA GAT AAA TCT          960
Glu Lys Lys Asp Gly Ser Ile Lys Pro Glu Gln Lys Glu Asp Lys Ser
305                      310                      315                      320

GCT GAC ATA CAA AAT CAT ACA TTA GAG ACA GTA AAT ATT TCT GAT GTT         1008
Ala Asp Ile Gln Asn His Thr Leu Glu Thr Val Asn Ile Ser Asp Val
                    325                      330                      335

AAT GAT TTT CAA ATA AGT AAG TAT GAG GAT GAA ATA AGT GCT GAA TAT         1056
Asn Asp Phe Gln Ile Ser Lys Tyr Glu Asp Glu Ile Ser Ala Glu Tyr
```

```
                340                          345                          350

GAC GAT TCA TTA ATA GAT GAA GAA GAA GAT GAT GAA GAC TTA GAC GAA          1104
Asp Asp Ser Leu Ile Asp Glu Glu Glu Asp Asp Glu Asp Leu Asp Glu
        355                 360                 365

TTT AAG CCT ATT GTG CAA TAT GAC AAT TTC CAA GAT GAA GAA AAC ATA          1152
Phe Lys Pro Ile Val Gln Tyr Asp Asn Phe Gln Asp Glu Glu Asn Ile
        370                 375                 380

GGA ATT TAT AAA GAA CTA GAA GAT TTG ATA GAG AAA AAT GAA AAT TTA          1200
Gly Ile Tyr Lys Glu Leu Glu Asp Leu Ile Glu Lys Asn Glu Asn Leu
385                 390                 395                 400

GAT GAT TTA GAT GAA GGA ATA GAA AAA TCA TCA GAA GAA TTA TCT GAA          1248
Asp Asp Leu Asp Glu Gly Ile Glu Lys Ser Ser Glu Glu Leu Ser Glu
                    405                 410                 415

GAA AAA ATA AAA AAA GGA AAG AAA TAT GAA AAA ACA AAG GAT AAT AAT          1296
Glu Lys Ile Lys Lys Gly Lys Lys Tyr Glu Lys Thr Lys Asp Asn Asn
            420                 425                 430

TTT AAA CCA AAT GAT AAA AGT TTG TAT GAT GAG CAT ATT AAA AAA TAT          1344
Phe Lys Pro Asn Asp Lys Ser Leu Tyr Asp Glu His Ile Lys Lys Tyr
        435                 440                 445

AAA AAT GAT AAG CAG GTT AAT AAG GAA AAG GAA AAA TTC ATA AAA TCA          1392
Lys Asn Asp Lys Gln Val Asn Lys Glu Lys Glu Lys Phe Ile Lys Ser
    450                 455                 460

TTG TTT CAT ATA TTT GAC GGA GAC AAT GAA ATT TTA CAG ATC GTG GAT          1440
Leu Phe His Ile Phe Asp Gly Asp Asn Glu Ile Leu Gln Ile Val Asp
465                 470                 475                 480

GAG TTA TCT GAA GAT ATA ACT AAA TAT TTT ATG AAA CTA TAA              1482
Glu Leu Ser Glu Asp Ile Thr Lys Tyr Phe Met Lys Leu
                485                 490
```

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

```
AAG GTT ATA TAT                                                    12
Lys Val Ile Tyr
  1
```